



## Effects of climate change on environmental factors in respiratory allergic diseases

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### Abstract:

A body of evidence suggests that major changes involving the atmosphere and the climate, including global warming induced by human activity, have an impact on the biosphere and the human environment. Studies on the effects of climate change on respiratory allergy are still lacking and current knowledge is provided by epidemiological and experimental studies on the relationship between asthma and environmental factors, such as meteorological variables, airborne allergens and air pollution. However, there is also considerable evidence that subjects affected by asthma are at an increased risk of developing obstructive airway exacerbations with exposure to gaseous and particulate components of air pollution. It is not easy to evaluate the impact of climate change and air pollution on the prevalence of asthma in general and on the timing of asthma exacerbations. However, the global rise in asthma prevalence and severity suggests that air pollution and climate changes could be contributing. Pollen allergy is frequently used to study the interrelationship between air pollution, rhinitis and bronchial asthma. Epidemiological studies have demonstrated that urbanization, high levels of vehicle emissions and westernized lifestyle are correlated to an increase in the frequency of pollen-induced respiratory allergy, prevalent in people who live in urban areas compared with those who live in rural areas. Meteorological factors (temperature, wind speed, humidity, etc.) along with their climatological regimes (warm or cold anomalies and dry or wet periods, etc.), can affect both biological and chemical components of this interaction. In addition, by inducing airway inflammation, air pollution overcomes the mucosal barrier priming allergen-induced responses. In conclusion, climate change might induce negative effects on respiratory allergic diseases. In particular, the increased length and severity of the pollen season, the higher occurrence of heavy precipitation events and the increasing frequency of urban air pollution episodes suggest that environmental risk factors will have a stronger effect in the following decades.

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### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Precipitation, Temperature

**Air Pollution:** Allergens, Interaction with Temperature, Ozone, Particulate Matter, Other Air Pollution

**Air Pollution (other):** NO<sub>2</sub>, VOCs, SO<sub>2</sub>

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**Temperature:** Fluctuations

**Geographic Feature:** ☒

resource focuses on specific type of geography

Urban

**Geographic Location:** ☒

resource focuses on specific location

Global or Unspecified

**Health Impact:** ☒

specification of health effect or disease related to climate change exposure

Respiratory Effect

**Respiratory Effect:** Asthma, Upper Respiratory Allergy

**Population of Concern:** A focus of content

**Population of Concern:** ☒

populations at particular risk or vulnerability to climate change impacts

Children

**Other Vulnerable Population:** people with existing respiratory disease

**Resource Type:** ☒

format or standard characteristic of resource

Review

**Timescale:** ☒

time period studied

Time Scale Unspecified